WHAT IS CLAIMED IS:

1. A micromechanical resonator device having at least one mode shape, the device comprising:

a substrate; and

a disk-shaped resonator disposed above the substrate and having at least one nodal point.

2. The device as claimed in claim 1 further comprising a support structure anchored to the substrate to support the resonator at the at least one nodal point above the substrate wheein both the resonator and the support structure are dimensioned and positioned relative to one another so that the resonator is substantially isolated during vibration thereof wherein energy losses to the sustrate are substantially eliminated and wherein the resonator device is a high-Q resonator device.

3. The device as claimed in claim 1 wherein the at least one mode shape includes a radial-contour mode shape.

4. The device as claimed in claim 1 wherein the at least one mode shape includes a flexural mode shape.

5. The device as claimed in claim 1 further comprising a drive electrode structure formed on the substrate at a position to allow electrostatic excitation of the resonator so that the resonator is driven in the at least one mode shape and wherein the resonator and the drive electrode structure define a capacitive gap therebetween.

6. The device as claimed in claim 5 wherein the drive electrode structure is disposed about a periphery of the resonator and wherein the at least one mode shape includes a radial-contour mode shape.

7. The device as claimed in claim 5 wherein the capacitive gap is a sub-micron, lateral, capacitive gap.

8. The device as claimed in claim 6 wherein the drive electrode structure includes a plurality of split electrodes.

9. The device as claimed in claim 1 wherein the at least one nodal point corresponds to a center of the resonator.

10. The device as claimed in claim 9 wherein the support structure is a single anchor positioned at the center of the resonator.

11. The device as claimed in claim 5 further comprising a sense electrode structure formed on the substrate at a position to sense output current based on motion of the resonator.

12. The device as claimed in claim 11 wherein the drive electrode structure includes a plurality of separate input drive electrodes and the sense electrode structure includes a plurality of separate output sense electrodes.

13. The device as claimed in claim 5 wherein the drive electrode structure is positioned beneath the resonator and wherein the at least one mode shape includes a flexural mode shape.

14. The device as claimed in claim 1 wherein the device is diamond-based.

15. The device as claimed in claim 1 wherein the device is silicon-based.

16. A micromechanical device comprising:

a substrate;

a disk-shaped input resonator disposed above the substrate and having at least one nodal point; and

a disk-shaped output resonator disposed above the substrate and coupled to the input resonator and having at least one nodal point.

17. The device as claimed in claim 16 further comprising support structures anchored to the substrate to support the input and output resonators at their respective nodal points above the substrate.

18. The device as claimed in claim 16 further comprising an intermediate resonator disposed above the substrate and coupled to the input and output resonators and having at least one nodal point.

19. The device as claimed in claim 16 wherein the micromechanical device is a filter.

20. The device as claimed in claim 16 wherein the resonators are mechanically coupled together.

21. The device as claimed in claim 20 wherein the device is a bandpass filter.

22. The device as claimed in claim 16 wherein the resonators are electrically coupled together.

23. The device as claimed in claim 22 wherein the device is an integrable filter.

24. The device as claimed in claim 20 further comprising a coupling spring for mechanically coupling the resonators together.

25. The device as claimed in claim 16 further comprising a drive electrode structure formed on the substrate at a position to allow electrostatic

excitation of the input resonator and a sense electrode structure formed on the substrate at a position to sense output current based on motion of the output resonator.

26. The device as claimed in claim 18 further comprising a drive electrode structure formed on the substrate at a position to allow electrostatic excitation of the input resonator, a sense electrode structure formed on the substrate at a position to sense output current based on motion of the output resonator and an intermediate electrode structure formed on the substrate at a position for enhanced access to a response of the device.

27. The device as claimed in claim 18 further comprising a non-adjacent coupler for mechanically coupling the input resonator to the output resonator wherein the device is a bridged filter.

28. The device as claimed in claim 16 wherein the device is a mixer.

29. The device as claimed in claim 1 wherein the resonator has at least one anti-nodal portion where the resonator experiences the most displacement when driven and wherein the device further comprises sensing means for sensing motion of the anti-nodal portion.

30. The device as claimed in claim 29 wherein the sensing means includes at least one projection projecting from the anti-nodal portion to move therewith and means coupled to the at least one projection to provide an output representation of motion of the anti-nodal portion.

31. The device as claimed in claim 30 wherein the means includes at least one electrode structure.

32. The device as claimed in claim 1 further comprising a single electrode structure formed on the substrate at a position to allow electrostatic

excitation of the resonator and to sense output current based on motion of the resonator.